



ABSTRACT

This invention relates generally to cutting single-wall carbon nanotubes (SWNT). In one embodiment, the present invention provides for preparation of homogeneous populations of short carbon nanotube molecules by cutting and annealing (reclosing) the nanotube pieces followed by fractionation. The cutting and annealing processes may be carried out on a purified nanotube bucky paper, on felts prior to purification of nanotubes or on any material that contains single-wall nanotubes. In one embodiment, oxidative etching with concentrated nitric acid is employed to cut SWNTs into shorter lengths. The annealed nanotubes may be disbursed in an aqueous detergent solution or an organic solvent for the fractionation. Closed tubes can also be derivatized to facilitate fractionation, for example, by adding solubilizing moieties to the end caps.